

in an MMS message, PDF application, word document, excel graphs, excel charts, four dimensional (4-D) screen-saver, 4-D art, 4-D drawings, 3-D imagery, a 3-D sculpture, a 4-D “etch-a-sketch”, or architecture designs using scalable or vector graphics. Any of the content given above and displayed by portion 428 may be transmitted or received over one or more network adapters 128.

Moreover, portion 428 can provide, replicate, or simulate integrated circuit layouts, electrical circuit layouts, facial features, enhanced video clips, computer aided designs (CAD), semiconductor layouts, prototyping, modeling, molding for producing form factors, logos, trademarks, a children’s educational product, a general education product, a 3-D drawing tool, distance learning, or a pop-up children’s books, as desired. In addition, portion 428 can be responsive to voice or visual commands or recognition detected by sensors 126 for being elevated, indented, or texturized.

Moreover, portion 428 can provide object awareness to display device 402. For instance, a post it note can be detected when it is determined that there is additional resistivity or elasticity by the adhesive on the post it note by pressure sensors 123 and in combination with touch detectors 124 and/or display(s) elevation, indenting, or texturizing controller 121 to raised or elevated cell in portion 428. In response to the detected post it, display device 402 can adapt and reformat the images around the note such that images are not obstructed to the user.

Moreover, portion 428 can provide advanced Bluetooth capabilities for Bluetooth keyboards, headsets and can function as a Bluetooth device itself for medical applications. When a call is received over one or more network adapters 128, a preprogrammed texturized pattern is reproduced on portion 428 for notifying the user, such as when display device 402 is in a shirt pocket in hands-free mode communicating with a wireless headset. Alternatively, the texturized pattern reproduced on portion 428 during an incoming call can be controlled, designed, or customized by the calling party if the function is enabled on device 100.

Still referring to FIG. 4, another embodiment provides object detection for a 3-D object that is placed on area 429 having a combination of elevated cells, indented cells, and/or texturized cells. FIG. 5 is a process 500 for detecting objects or shapes using elevated, indented, or texturized display portions. Although process 500 can be performed by device 100 in a fat client architecture, device 100 can also be configured as a thin client by sharing shape detection processing functions with a server (not shown) using one or more network adapters 128. Cells are selectively raised around an object placed on area 429 by display(s) elevation, indenting, or texturizing controller 121 (step 502). The weight of the object is detected by pressure sensors 123 and shape detectors 125 and a height graph of the surface of the object is generated by one or more processors 102 (step 504). The perimeter of the object placed on area 429 is determined by one or more processors 102 and shape detectors 125 by raising or lowering cells in proximity to object by display(s) elevation, indenting, or texturizing controller 121 (step 506). One or more processors 102 calculate gradients values (step 508) and generates a surface graph (step 510) based on the previous measurements made.

Moreover, display device 402 may have infrared detectors 430<sub>1</sub>-430<sub>4</sub> in a slightly beveled position or in the level with the frame of display device 402. Display device 402 may also have digital cameras 434<sub>1</sub>-434<sub>4</sub> for capturing, tracking, and detecting shapes using algorithms such as that described in U.S. Pat. No. 7,317,872, herein incorporated by reference as if fully set forth, that can be used to perform additional

sensor measurements (step 512). Other sensor measurements for additional metrics and refinement include infrared or optical detection to detect depth. These sensors can be embedded next to or within each display cell in display device 402. Based on steps 502-512, a preliminary image may be rendered by one or more processors 102. The preliminary image can be compared and matched against a database of images in storage 110, or stored remotely, using artificial intelligence algorithms. Information is then retrieved by one or more network adapters 128 based on the detected object and/or preliminary image (step 514).

In a process involving area 429 and process 500, a ring size is detected and related information, such as from an online jewelry stored, is retrieved over one or more network adapters in response. Alternatively, the size and type of certain household goods, such as hardware, screws, nuts, light bulbs, batteries can be determined by area 429 and process 500. Moreover, a key placed on area 429 can be keyed and the information sent over one or more network adapters 128 for subsequent duplication and mail delivery by an online store. In addition, process 500 can be used to obtain biometric information for security purposes.

In another process involving area 429, intellectual property assets, such as patents, trademarks, or copyrights, relating to the shape of a detected object is retrieved and displayed in a map format in display device 402 to show a correspondence between similar features of an object and related intellectual property assets. FIG. 7 is a process using an elevated, indented, or texturized display device for identifying intellectual property assets. The shape of a widget 702 placed on area 429 is detected by process 500 and digitally rendered. The detected shape of the widget 702 is compared against widgets 706<sub>1</sub>, 706<sub>2</sub>, or 706<sub>3</sub> shown and described in US Patent No. X (704) stored in a database. The comparison between widgets can be performed graphically using image rendering, as understood to one of ordinary skill in the art. Moreover, artificial intelligence algorithms can be used to compare claim text or descriptions 710 in US Patent No. X (704) against features detected by area 429 and process 500. If a match is determined or found, the widget 702 is associated with US Patent No. X (708) and displayed in a map format on display device 402.

In another embodiment, display device 402 replicates, mimics, or simulates a customizable or programmable interface or control panel for a remote control, instrument panel on a vehicle, an automobile dashboard configuration, audio equalizers, multitouch equalizers, radio button list, or a consumer electronics button surface with raised button portions 432<sub>1</sub>-432<sub>3</sub>. The simulated interface can be used to sell consumer electronics or function as an advanced user guide whereby input, output, and programming functions are simulated with button portions 432<sub>1</sub>-432<sub>3</sub> that have the same size and shape as the actual buttons on a product. Moreover, 432<sub>1</sub>-432<sub>3</sub> can be programmed for controlling volume control, replicating smart home switches or controllers, as desired.

Still referring to FIG. 4, advanced web searching 436 is performed by measuring pressure applied or detecting depth perception to raised or elevated portion 438. Web searching 436 can be used in combination with area 429 to display hits or webpages relevant to detected objects.

FIG. 6 is a process 600 using an elevated, indented, or texturized display device that can be selectively performed by the display devices described above. Information is received from one or more network adapters 128, I/O devices 118, or storage device 110 (step 602). The sector of cells to be elevated, indented, or texturized based on the